ABSTRACT OF THE DISCLOSURE

A vehicle controller adjusts fuel delivered to an engine to compensate for an unknown fuel type being added to a fuel tank in a flexible fueled vehicle. The controller fuels a first set of engine cylinders according to first fueling scheme. For example, the controller fuels the first set assuming that E85 fuel was added to the fuel tank. The controller fuels a second set of engine cylinders according to a second fueling scheme. For example, the controller fuels the second set assuming that E0 fuel was added to the fuel tank. The controller continues to fuel the engine in this manner until an oxygen sensor becomes available. When the oxygen sensor becomes available, the vehicle controller may fuel the engine according to information from the oxygen sensor.